Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: HD-5 Propane

Synonyms: Propane; Dimethylmethane; Propyl hydride; CASRN 74-98-6.

Product Use: Automotive or space heating fuel. Chemical process intermediate.

Manufacturer/Supplier: Husky Oil Operations Ltd.
PO Box 6525 Station 'D'
Calgary, Alberta
T2P 3G7

Phone Number: 403-298-6111

Emergency Phone: 403-262-2111

Date of Preparation: March 19, 2012

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER
FLAMMABLE GAS, MAY CAUSE FLASH FIRE. GAS UNDER PRESSURE. MAY CAUSE FROSTBITE. MAY IRRITATE EYES AND SKIN.

Colour: Colourless.
Physical State: Gas.
Odour: Hydrocarbon.

WHMIS	Personal Protection Equipment	TDG (Ground)

Potential Health Effects: See Section 11 for more information.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation.

Eye: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. The pain after contact with liquid can quickly subside. Permanent eye damage or blindness could result.

Skin: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

Ingestion: Not a normal route of exposure.

Inhalation: May cause respiratory tract irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product is classified as a simple asphyxiant. Adverse health effects occur as a result of the displacement of oxygen. Central nervous system depression can occur if product is present in concentrations that will reduce the oxygen content of air below 18% (vol). Symptoms may include headache, light-headedness, drowsiness, disorientation, vomiting and seizures. Unconsciousness and death may occur with severe oxygen deprivation. Recent studies suggest light hydrocarbons in high concentrations may produce narcotic effects including dizziness, headache and fatigue.

Chronic Effects: See Section 11 for more information.

Medical Conditions Aggravated By Exposure: Not available.

Target Organs: Skin. Eyes. Respiratory system. Nervous system.

Potential Environmental Effects: See Section 12 for more information.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Wt. %
Propane	74-98-6	60 - 100
Butane	106-97-8	0.5 - 1.5
Ethane	74-84-0	0.5 - 1.5

Section 4: FIRST AID MEASURES

Eye Contact: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Flush eyes with plenty of warm water for at least 15 minutes. Get medical attention immediately.

Skin Contact: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Flush immediately with warm water. Remove non-adhering contaminated clothing. Do not remove adherent material or clothing. Get medical attention immediately.

Ingestion: Not a normal route of exposure.

Inhalation: Remove person to fresh air. If breathing has stopped apply artificial respiration. If signs/symptoms develop, get medical attention.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or MSDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE FIGHTING MEASURES

Flammability: Flammable gas by WHMIS criteria. Flammable gas by OSHA criteria. Cool containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosion. May be ignited by contact with heat, sparks or open flame. Gas may accumulate in confined spaces. Gas can travel considerable distances to ignition sources and cause a flash fire.

Means of Extinction
Suitable Extinguishing Media: Dry chemical, foam, or carbon dioxide.
Unsuitable Extinguishing Media: Water may not be an effective medium to extinguish fire.

Products of Combustion: Oxides of carbon.

Protection of Firefighters: Do not extinguish fire if source of gas cannot be safely turned off. If flames are accidentally extinguished explosive re-ignition may occur if ignition sources are not controlled. Be alert to container rupture potential if tanks are involved in a fire. Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

Explosion Data
Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge: This material is sensitive to static discharge.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Evacuate all unnecessary personnel. Stay upwind. Eliminate all ignition sources. Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental Precautions: Prevent spreading of vapors through sewers, ventilation systems and confined areas.

Methods for Containment: Control release of gas if without risk.

Methods for Clean-Up: Isolate area until gas has dispersed.

Other Information: Dispose of in accordance with all federal, provincial and local regulations. Comply with federal, provincial, and local requirements for spill and/or release notification.

Section 7: HANDLING AND STORAGE

Handling:
Avoid contact with skin and eyes. All equipment used when handling the product must be grounded. Wash hands before eating, drinking, or smoking. See Section 8 for information on Personal Protective Equipment.

Storage:
Store in cool, dry, well-ventilated area away from incompatible materials, heat, and sources of ignition. All storage containers and pumping equipment should be grounded. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Propane
(74-98-6) **ACGIH:** 1000 ppm (TWA); (2001)
(74-98-6) **OSHA:** 1000 ppm (TWA), 1800 mg/m³ (TWA);

Butane
(106-97-8) **ACGIH:** 1000 ppm (TWA); (2001)
(106-97-8) **OSHA:** 800 ppm (TWA) [Vacated]

Ethane
(74-84-0) **ACGIH:** 1000 ppm (TWA); (2001)
(74-84-0) **OSHA:** No PEL established.

PEL: Permissible Exposure Limit
TLV: Threshold Limit Value
TWA: Time-Weighted Average
STEL: Short-Term Exposure Limit
C: Ceiling

Engineering Controls:	Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof ventilation equipment.
Personal Protective Equipment	
Eye/Face Protection:	Safety glasses are recommended.
Hand Protection:	Wear impervious gloves. Consult manufacturer specifications for further information.
Skin and Body Protection:	Wear suitable protective clothing. Flame resistant clothing such as Nomex ® is recommended in areas where material is stored or handled.
Respiratory Protection:	If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator or self-contained breathing apparatus (SCBA) should be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.
General Hygiene Considerations:	Handle according to established industrial hygiene and safety practices.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colourless gas.
Colour:	Colourless.
Odour:	Hydrocarbon.
Odour Threshold:	Not available.
Physical State:	Gas.
pH:	Not available.
Viscosity:	Not available.
Melting Point:	-190 °C
Boiling Point:	-42 °C
Flash Point:	Not available.
Evaporation Rate:	Not available.
Lower Flammability Limit:	2.2 % (Propane)
Upper Flammability Limit:	9.5 % (Propane)
Vapor Pressure:	Not available.
Vapor Density:	1.56 (Air = 1) Propane
Specific Gravity:	0.5 (Water = 1) @ 20°C
Density:	Not available.
Solubility in Water:	Very slightly soluble.

Coefficient of Water/Oil Distribution: Not available.

Auto-ignition Temperature: 450 °C

Percent Volatile, wt. %: Not available.

VOC content, wt. %: Not available.

Section 10: STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions.

Conditions of Reactivity: Contact with incompatible materials. Sources of ignition.

Incompatible Materials: Strong acids. Strong bases. Oxidizers. Chlorine.

Hazardous Decomposition Products: Not available.

Possibility of Hazardous Reactions: None known.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Propane	74-98-6	Not available.	Not available.	Not available.
Butane	106-97-8	Not available.	Not available.	658000 mg/m³, (rat), 4H
Ethane	74-84-0	Not available.	Not available.	Not available.

Eye: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. The pain after contact with liquid can quickly subside. Permanent eye damage or blindness could result.

Skin: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

Ingestion: Not a normal route of exposure.

Inhalation: May cause respiratory tract irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product is classified as a simple asphyxiant. Adverse health effects occur as a result of the displacement of oxygen. Central nervous system depression can occur if product is present in concentrations that will reduce the oxygen content of air below 18% (vol). Symptoms may include headache, light-headedness, drowsiness, disorientation, vomiting and seizures. Unconsciousness and death may occur with severe oxygen deprivation. Recent studies suggest light hydrocarbons in high concentrations may produce narcotic effects including dizziness, headache and fatigue.

Skin Sensitization: Not hazardous by OSHA/WHMIS criteria.

Respiratory Sensitization: Not hazardous by OSHA/WHMIS criteria.

EFFECTS OF CHRONIC EXPOSURE

Target Organs: Skin. Eyes. Respiratory system. Nervous system.

Chronic Effects: Not hazardous by OSHA/WHMIS criteria.

Carcinogenicity: Not hazardous by OSHA/WHMIS criteria. This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Propane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.
Butane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.
Ethane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.

Mutagenicity: Not hazardous by OSHA/WHMIS criteria.

Reproductive Effects: Not hazardous by OSHA/WHMIS criteria.

Developmental Effects

Teratogenicity: Not hazardous by OSHA/WHMIS criteria.

Embryotoxicity: Not hazardous by OSHA/WHMIS criteria.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORTATION INFORMATION

CFR

Proper Shipping Name: UN 1978, PROPANE, 2.1

Class: 2.1

UN Number: 1978

Packing Group: Not applicable.

Label Code:

TDG

Proper Shipping Name: UN 1978, PROPANE, 2.1

Class: 2.1

UN Number: 1978

Packing Group: Not applicable.

Label Code:

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

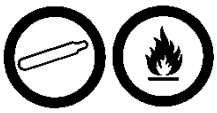
Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification: Class A - Compressed Gas.
Class B1 - Flammable Gases.

Hazard Symbols:



United States
This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Propane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Butane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Ethane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000

State Regulations

Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Propane	74-98-6	Listed.
Butane	106-97-8	Listed.
Ethane	74-84-0	Listed.

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Propane	74-98-6	SHHS
Butane	106-97-8	SHHS
Ethane	74-84-0	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Propane	74-98-6	Listed.
Butane	106-97-8	Listed.
Ethane	74-84-0	Listed.

Note: E = Environmental Hazard; S = Special Hazardous Substance

California

California Prop 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use.

Expiry Date: March 18, 2015

Version: 1.0

MSDS Prepared by: **Deerfoot Consulting Inc.**

Phone: (403) 720-3700